Establishment of a Finnish ICT rural village network

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Abstract: *My paper will focus on the presentation of a project which I am currently carrying on with researchers from the Department of Computer Science of the University of Joensuu (Finland). The project is about the establishment of a Finnish ICT Rural Network made up of three rural villages, namely Vuonislahti (in Karelia), Kaamasmukka (in Lapland) and Henriksdal (in Swedish speaking Ostrobothnia). These three villages are from different geographical areas of Finland and present different backgrounds in terms of traditions and languages spoken, but share the same challenges connected to the hardship of living in remote rural areas (aging population, lack of infrastructures, isolation). Through the use of Information and Communications Technologies or ICTS (i.e. mainly internet, mobile phones, GPS) villagers are constantly put in contact with one another and they are able to exchange knowledge/know-how and best practices connected to their traditional activities; in this way they can learn/drive inspiration from each other and they can also join forces to promote coordinated social and economic activites. The project – by fostering a living lab spirit among the villages - combines anthropological and social investigations with technical aspects connected to the use/development of ICTs tools. My paper will present the results of the project, currently in the 2nd year of its activities. The main focus will be on the e-learning aspects of the project combined with Web 2.0 technologies and their impact on the life of the villagers, their social inclusion and interaction. Challenges and achievements will be equally illustrated.*

Keywords: *Finland, villages, ICTS, network, living lab*

The importance of rural development in Finland

Finland is one of the most rural countries of Europe. According to the OECD definition of rural areas, Finland ranks fifth in terms of the share of territory covered by predominantly rural (PR) regions (89%) and ranks second both in terms of population that they host (53%) and in GDP produced within these regions (45%). The rural territory in Finland is heterogeneous along two dimensions: Northern and Eastern regions have a greater dispersion and a higher proportion of population living in rural municipalities than Southern and Western regions; and along the peri-urban to remote continuum (as the Finnish Rural Typology identifies) there is a clearly differentiated situation in rural municipalities close to urban areas (RCUAs), rural heartland municipalities (RHMs) and sparsely populated rural municipalities (SPRMs).

The Finnish model of rural policy has been reasonably successful in achieving coherence among sectoral policies oriented to rural areas (the so-called broad rural policy) and in tailoring specific programmes to promote rural development (the so-called narrow rural policy). Despite this, Finland still faces important challenges in terms of rural development: such challenges are linked to the capacity of rural municipalities to fund and deliver public services in the context of a decreasing and ageing population, and the difficulties for population in remote and dispersed localities to launch new profitable activities and to fight unemployment, lower earnings and exclusion from the society. Finland has also been active in various LEADER project's funded by EU. In the LEADER initiative, the aim is to promote economic development in rural areas by using an inclusive approach. The LEADER activities in Finland have been successfully integrated into the everyday life conditions of rural communities in order to support the development strategies on a local level. The aim of the current project is to follow the approach and experiences of the LEADER initiative with a focus on ICT and innovation.

More generally, the root challenge of all rural communities is the shaping of new strategies

responsive to the enduring realities of rural economies and cultural life. Revitalizing "rural" is a priority. A prominent feature of this rural revitalization (generally termed Local Economic Development - or LED) is the capacity of individual communities to bring about a better future for themselves: to achieve this, the focus of rural development projects should be on the participation of small communities in search of positive change, and on capacity building, whereby local people are encouraged to think more about their futures and to put into practice their ideas for securing those futures.

To foster an inclusive rural development, the usage of ICT might represent a unique opportunity, which Finland – already a world-class information society's laboratory - should grasp. The applications of new, versatile, ICT-based services, concepts and products are already used in sectors like education, tourism, well-being, culture and administration. But crucial for the application of ICT in Finland- as well as in the rest of the world- is that ICT should be used in a goal-oriented fashion and with a new, versatile approach (from "ICT and Productivity in Finland", published in the spring of 2006 by the Information Society Council by Markku Markkula, the chairman of the board of TIEKE and the director of TKK Dipoli). Thus requires identifying and elaborating fresh ideas at grassroots level.

Development of ICT4RD based on the enhancement of local strengths

ICT has a central role in the Information Society, in which knowledge and creativity have a key impact on the lives of people. In order to find, share, create and process information one has to be able to access, design and, indeed, own various information technology innovations; if this doesn't happen, the risk of exclusion from the Information Society (e.g. the phenomena often referred to as digital divide) is very high. Thus, access, use and processing of information are key aspects of development which affect individuals, communities and whole societies. ICT enables, for instance, design and implementation of creative information based solutions in order to bridge several kinds of developmental gaps caused by physical distances, time constraints, limited resources or cultural differences. ICT solutions can also act as an agent of change towards positive development within societies. However, the concepts and meanings of development and empowerment is a complex issue where cultural, social and economical aspects need to be taken into consideration. According to Unwin (2008), a sustainable development work should empower people and citizens to reflect their own situation and behavior in order to enable societies and communities to realize the need for improvement and change.

In line with this statement, the report "Towards a Networked Finland", published in the spring of 2005 by the Information Society Council, underlines that the key factor for successful projects in rural areas - where communities are in fact often in danger of leaving behind from the development of the whole society- is the self-renewal capacity of communities and individuals together with a dynamic management of processes. Consequently, a strict focus only on the needs, rather than the strengths, of rural people is a limitation and can bring about a passive development. The needs are often identified outside of the community, which often creates a situation where the local community do not take an active role in the development, but they will passively wait and expect outside contribution.

In recent years quite a number of ICT4RD projects have been launched in Finland. Most of them - like the North Karelia Regional Network (Maakuntaverkko) or the MATVE - (Rural Network Information Project) – have used the newest technology solutions and networks to provide eServices for citizens more effectively (school, education, health, social administration, etc.). Others - like the Finland Sustainable Rural eHealth Care Networks project or the PICYBU project of the Kemi-Tornio Polytechnic - have focused on sustainable technological solutions for both clinical cooperation and decentralized education/training for elderly and young people living in sparsely populated rural areas. Some of the existing ICT4RD projects have also been criticized of not having enough concrete results or having too general research and development agendas. ICT4RD in general still reflects mainly Web1.0 idea of delivery, while the contemporary development in IT calls for Web2.0 idea of

collaboration and participation and for Web3.0 idea of pervasiveness.

Table 1. Differences between an ICT need-based and an ICT strength-based design, when the motivation for ICT4RD moves from use to development.

Motivation	**Needs-based Approach**	**Strength-based Approach**
Use	Import and transfer of ICT4RD; dumping solutions Example: introduction of Facebook to village residents	Constructive and innovative evaluation of existing technology Spin-offs/unexpected use of existing technology Example: use of Facebook for marketing of village products and services
Development	Conservative ICT4RD Localization of solutions according to the needs of the local people Innovations are rare Example: localization of Facebook to meet the needs of the local community	Innovative solutions Real inclusion of local people to the development process Example: a novel tool for community-based marketing of services and products

So far, it seems that ICT4RD projects have mainly addressed the needs of rural areas using or adapting the existing technological solutions, limiting themselves to find general solutions by applying technologies in a conventional way. What should instead be achieved- and that's the aim of the present project- is the development and usage of ICT solutions in a more constructive, original and pioneering way, and the application of a participatory design-approach based on the enhancement of local strengths, and not on local needs, which leads also to more specific and relevant results. The ICT4RD methods is built on the experiences and knowledge of two previous design methods developed at University of Joensuu; FODEM in Educational Technology (Suhonen, 2005) and CATI in ICT4D (Vesisenaho, 2007).

With the term Participatory Design (PD), we refer to a rich diversity of theories, practices, methods and tools, with the goal of integrating and including users and other stakeholders in the design and development process of ICT and innovations (Muller and Kuhn, 1993; Törpel, 2005). In the PD approach users can take an active role in all the development phases, i.e. analysis, design, implementation and evaluation. The tools and techniques of PD promote a situation where designers are able to learn about users' work, and where users are able to themselves design new innovations (Ehn, 1993; Törpel, 2005). The participation of the intended users is seen as one of the preconditions for good design (Kensing and Blomberg, 1998). Variety of methods can be used to collect relevant data to guide the design and development, such as working groups, intensive workshops, visualizations, prototypes, ethnographic field work (e.g. open ended, contextual interviews) and participant observations (Beyer and Holtzblatt, 1997; Muller and Kuhn, 1993). Furthermore, scenarios, mock-ups, simulations, design games and cooperative prototyping are used to support the communication between the designers and users so that the users can continuously follow and participate to the emerging process of novel ICT applications (Kensing and Blomberg, 1998).

In our project, making room for the skills, experiences, and interests of village residents into the design of ICT is thought to increase the likelihood that the developed solutions will be useful, sustainable and well integrated into the work practices of the village community. The ICT designers work together with the ICT4RD network to explore the viability and potential of the solutions as a part of the everyday life of the villages. We are using some "conventional" ICT applications - like Facebook or mobile devices –in a fresh and novel way (i.e. for the marketing of village products and services in a profitable way) and to create new tools -like Voicebook for example - to give voice to people and help them in establishing contacts. This new perspective allows the development of unconventional ICT applications and the promotion of creativity which might bring about "real capacity building" and forge new skills and capacities within the rural communities.

The main applications areas of ICT varies according to the strengths and potential of the ICT4RD village network can be summoned as follows:

- *Marketing of agricultural products globally* - development of nature friendly agricultural practices to maintain rural landscapes vibrant and economically profitable
- *Tailored tourism services* - development of small-scale nature and cultural tourism, based on sustainable use of local natural values and intended as an additional income opportunities for local people, local network building, development of partnership between ecotourism, enterprises and entrepreneurs, education for local entrepreneurs, solutions to support tailor-made (customer oriented) tourism services using mobile devices
- *Marketing and selling of local handicrafts* - development and marketing of traditional local handicrafts, based on sustainable resources use and providing additional income opportunities for local craftsmen and artisans.
- *Culture and education*- development of interactive websites based on the combination of Web 2.0 applications (like Facebook, YouTube, CoachSurfing, etc...) in order to promote the culture of minorities (Sami and Swedish speaking people in Ostrobothnia), to learn languages and getting encouraged to communicate (Swedish, Finnish and Sami language) and establish collaboration activities among people
- *Promoting multi-identity collaboration and co-creation* - cross-fertilization between the three native villages via peer-support networks and social software.

Presentations of the project

The project is in line with the Rural and Regional Development Policy of Finland for the period 2007-2013, whose main aims are the preservation of a viable and active countryside, the development of basic economic activities in the rural areas, the diversification of rural industries and the enhancement of a strong community spirit in rural development work. Since the Finland Rural Development strategy 2007-2013 states that: ".... diversified tools are needed for rural development and especially for the efforts to reduce the disparities between regions, founded on the needs and opportunities of the regions..." (pag. 12 of the Finland Rural Development strategy 2007-2013) the *Finnish ICT4RD Network* project represents an attempt to provide such diversified and effective tools.

The project intends to establish the development of innovative[1] applications of Information and Communication Technologies in coordination and consultation with rural villagers. During the 1st year of activities, the Finnish ICT4RD Network has been made up of three rural villages, namely Vuonislahti (in Karelia), Kaamasmukka (in Lapland) and Henriksdal (in Swedish speaking Ostrobothnia). By involving three villages from three different geographical areas, we have eliminated the danger of serving the interests of only one village and we aim at elaborating development strategies that might be applicable to other rural settings, even worldwide.

During the 2nd and 3rd year of activities –currently ongoing- we plan to expand the network and involve a growing number of rural villages around Finland.

The Finnish ICT4RD Network represents a first step towards the creation of a spin-off and a more global ICT4RD network which will aggregate rural villages from all the 5 continents (villages in Taiwan, Canada, Tanzania, South Africa, India have already been contacted). One of the identified global villages can also participate to the present project as a newcomer partner during the last years of the project.

The benefits and the improvement of the living conditions of the rural communities are at the center of the project. By focusing on their existing strengths/potential - not on their needs- and by developing them, the community spirit is proved to grow stronger and the social capital is enhanced by working together and sharing commitment to a better future. Activating the rural residents and committing them to rural development is important to improve the viability of the rural areas and their level of motivation to preserve the local natural resources in a profitable and sustainable way.

[1] Definition of innovation; An innovation is "an idea, practice or object that is perceived new by an individual", Rogers (1995).

The project also aims at creating a living lab spirit among the villages in order to empower the villages to cultivate to the future development of their community. An inclusive and participatory approach is fostered in every single phase of the project.

Objectives of the Finnish ICT4D Rural Network

We can divide the objectives of the project into research and development objectives. Furthermore, we have identified three different aspects of both research and development objectives, namely technical, methodological and human/social as seen in Table 2. The technical aspects are directly related to the technical research and development, e.g. research on the technologies, environments and applications developed during the project. The methodological aspects relate to the strength-based participatory ICT4RD design method applied in the design and development process of IT for rural communities. Finally, the human and social aspects deal with the impact of the ICT and innovations to the life situations and larger development in the villages.

Table 2. Technical, methodological and human/social research and development objectives.

Aspect	Research objective	Development objective
Technical	To develop new ICT applications in order to improve the potentialities of rural villagers and develop them into concrete projects	To develop ICT solutions in a way that they can be: - tightly integrated into the daily and working life of the village community - accessible, enjoyable and profitable for village residents
		Promote ownership of ICT among village communities
		To create platform for ICT4RD Network in order to foster an exchange of knowledge/know-how and best practices among villages so that they can learn/drive inspiration from each other
Methodological	To conduct research on approaches and methods for strength-based design in ICT4RD	To develop an agile and light strength-based design method for ICT4RD, which can be applied in other settings.
	To provide deeper understanding of the role and dynamics of participatory design in the field of ICT4RD.	To differentiate from previous ICT projects conducted in rural areas and therefore to propose an innovative approach to rural development
	To investigate methods how to integrate village habitants tightly into the design and development process of ICT4RD	
Social/human	To investigate villager's perceptions change as they become co-developers and users of ICT.	To increase the attractiveness of the rural villages for current and new generations and to promote social inclusion and interaction among inhabitants
	To investigate how locally developed ICT enables village community to improve the living conditions of villages	To raise awareness within the village concerning the potential for development
	To measure and evaluate the impact of the implemented technologies onto the lives of village communities.	To improve the external image of the rural areas by preserving and developing them at the same time

Short description of the villages involved

Currently, in the 2nd year of the project, the Finnish ICT4RD Network consists of three rural villages, namely Vuonislahti in North-Karelia, Kaamasmukka in Lapland and Henriksdal in Swedish speaking Ostrobothnia.

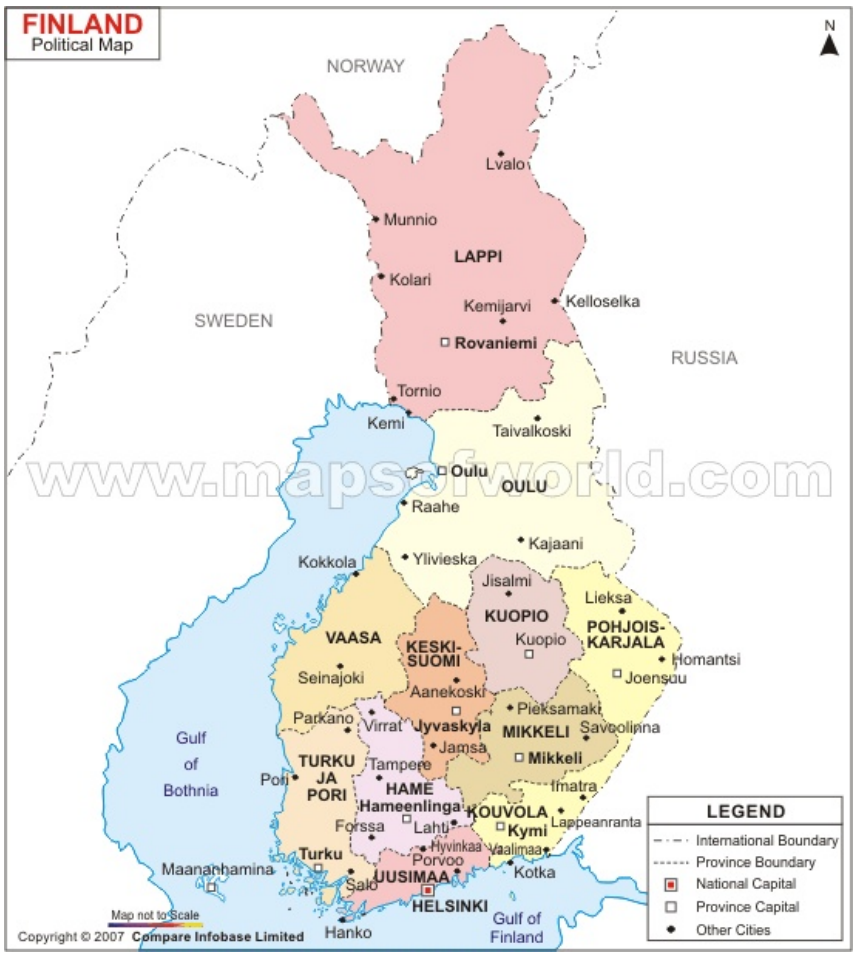

Figure 1. The map of Finland, Source: www.mapsoftheworld.com

Vuonislahti village

Vuonislahti village with about 200 permanent residents is located in the shores of the Lake Pielinen, in the southern part of the town Lieksa, North-Karelia. Pielinen is one of the biggest and best-known lakes in Finland. The nationally important and inspiring Koli region is located in the opposite side of the Lake Pielinen. Vuonislahti is strongly defined by water, lakes and rivers. One can not approach the area without thinking the meaning of water. Vuonislahti village offers various services to the travelers, both children and adults. The nature in the countryside offers first-class surroundings for living and recreation during holidays. Karelian cooking and the local handicrafts are the most well-known products of the area. Rural tourism in the Lake Pielinen area has its roots deep in the history. The tradition of taking care of visitors is important for residents of Vuonislahti. Contact person in Vuonislahti: Reino Kuivalainen.

Kaamasmukka village

Kaamasmukka (Sámi name Gámasmohkki) is a small village in Northern Lapland in the Utsjoki municipality. The village is located in the mid way of road between Kaamanen and Karigasniemi. The village is by the side of the Kaamasjoki river. The nearest fall, 466 meters high Kakstvarri, is located only few kilometers from the village of Kaamasmukka. The main sources of living in Kaamasmukka are reindeer farming and tourism. For instance, cabins are available for tourists and an official snowmobile route runs through the village. In the village, there are roughly 20 habitants.

Henriksdal village

The village of Henriksdal is located in the Swedish speaking Ostrobothnia in the western Finland. The village was founded in 1789 and it belongs to the municipality of Kristinestad. There are a bit more than 100 habitants in Henriksdal, 95% of the inhabitants are Swedish speaking. The main source of living in Henriksdal is agriculture. Also some people work, for instance, in companies and government agencies in Vaasa.

Strengths and challenges of the Finnish ICT4D Rural Network

Thanks to villages surveys and a collection of data though interviews, we have made a preliminary analysis of the strengths and challenges of the ICT4RD network.

Table 3 shows the differences and similarities in the villages of the ICT4RD Network in the beginning of the project. In the table, "++" means a clear strength and an empty slot depicts a real development challenge.

What emerges from the qualitative and quantitative analysis is that each village has its own peculiarities: Vuonislahti is in a very good location and has excellent services, while Kaamasmukka – in an isolated position- has a great sense of community and lively traditions and Henriksdal has good network connection, services and transportation**.**

The main challenge of the Finnish ICT4D Rural Network is represented by the coordination among the 3 villages.

Table 3. Differences and similarities of the ICT4RD Rural Network.

Strengths	Vuonislahti	Kaamasmukka	Henriksdal
Network connection	+		++
Tourism	+	+	
Location	++		+
Services	++		++
Community	+	++	+
Tradition	+	++	+
Transportation	++		++
Self-sufficiency	+	++	+

The ICT4RD Village Network seeks to encourage local and common active engagement that improves the rural people's quality of life and address the existing imbalances in the development of rural areas.

Through responsible development and investment, the project plays a major, positive impact on the:

- valorisation of the territory and of the human capital
- enhancement of the innovation capacity of communities (which is strongly related to their capacity to use their traditional knowledge for innovative practical solutions)
- local involvement and capacity building (successful participation gives rise to multiplier effects. The satisfaction of successful involvement in local initiatives creates the desire to seek out more opportunities of local relevance, creating a virtuous circle of participation).
- exchange of good practices and knowledge among people and villages
- training in ICT
- new job opportunities through diversification of work; part-time, distance, knowledge-based
- creation of microclusters (networks) of small companies operating locally, nationally and globally
- making the rural areas appealing and thus attract investments
- unexpected findings and spin-offs

During the 3rd year of activities, the project will pay attention in communicating and diffusing results and ICT innovations to other villages in Finland and worldwide which might draw inspiration from our project and benefit from it. Best practices and ICT solutions can in fact be "contextualized" and applied to other rural realities.

Working methods

According to the diffusion theories, the adoption process of a new technology can be complex, un-linear and diverse. In general, the appearance of new and unknown technology creates fear and uncertainty in the community, due to lack of knowledge and experience of the innovation (Rogers, 1995). We might refer this situation as "black-box" technology. Important factors affecting the development and adoption of innovation will be identified through a constructivist approach whereby each person is seen as a unique individual with unique peculiarities and backgrounds (social constructivism not only acknowledges the uniqueness and complexity of the person, but actually encourages, utilizes and rewards it as an integral part of the learning process - Wertsch 1997). The applied working methods varies according to the different stages of the project and is new and original in the research approach. The approach can be called "glass-box" since the aim is to make the development process and innovation itself transparent by integrating the village people in the design and development process. The working methods of the project are presented below in a chronological order:

1) Villages surveys + community assessments (identify "what and who" -identify resources in the communities - analyze the data collected)
2) SWOT analyses in the villages in order to identify the internal and external factors that are favorable and unfavorable to achieving the project's objectives.
3) Focus groups and meetings to raise awareness about the project and the potentialities of ICT applications applied to villages' strengths. Each of the villages have their own focus group, but also a focus group consisting of members from all three villages will be operational.
4) Market Analysis and Development (MA&D) approach - such methodology enables people to identify potential products and develop markets that will provide income and benefits without degrading the resource base. (Assessing local environmental sustainability is an integral part of identifying and planning potential enterprises)
5) Participatory approach to activities' development carried out in coordination with villages' representatives for a real ICT design
6) ICT design: since the applications will be mainly developed during the project, we do not exactly provide any specific descriptions of the ICTs developed during the project. However, the applications may be related to the following areas; preservation of culture (handicrafts, agricultural cultivations, storytelling connected to traditions and territory, music), communication between the different generations, creating new possibilities to market tourism services, entrepreneurship and creating new models for rural schools.
7) project staff will live and work together with a village for an extensive period of times
8) evaluation of the strength-based participatory design method
9) activating of the Finnish ICT4RD Network
10) evaluation the impact and effectiveness of the Finnish ICT4RD Network

Every three months a meeting between project staff and representatives from the villages takes place, in order to discuss achievements, problems and future steps to take. Computer science master students and PhD students are involved in this project and work in close collaboration/consultation with a board representation of village people from different generations.

What has been achieved so far and what still needs to be achieved

The project has its center and headquarters in the Joensuu region of North-Karelia, which is a disadvantaged province in Finland (the unemployment rates exceed the national average at 14%) and can therefore represents an interesting case study - or a model to contextualize and research further

after the completion of the project. A selected staff- mainly made up of a professor, a post-doc researcher and a Msc./PhD student from the Dept. of Computer Science and Statistics of the University of Joensuu function as project leader and coordinator of the activities and constantly work in coordination with local rural representatives. During the first stage of the project three villages- Vuonislahti, Kaamasmukka and Henriksdal - have formed the core of the village network and the main representatives of the villages have expressed interest and support.

Starting from the basic concept that every single village can be a powerful presence on the territory and that every village has its own strengths and challenges, we have developed a strength-based applications of ICT. Furthermore, research strength-based participatory design approaches and methods have been designed. A timetable and list of activities of the project is follows:

Year 1: Analysis and design

April 2009 - September 2009: Analysis and identification of strengths and possibilities, networking actions.

The first year of the project has included the following activities

1) Identification of the village representatives and distribution of roles and responsibilities. According to Kensing and Blomberg (1998), choice of user participants and the form of participation (methods and roles) must be carefully considered, planned negotiated with the project stakeholders, including users themselves.
2) Establishment of the Finnish ICT4RD Village Network
3) Identification of potentials to develop in the ICT4RD Village Network – through a village survey, SWOT analyses, interviews with residents and researches awareness has been raised in each specific village concerning the potentialities to develop (be it marketing of agricultural products, of handicrafts or development of tourist activities)
4) Employment of the Market Analysis and Development (MA&D) approach - such methodology enables people to identify potential products and develop markets that will provide income and benefits without degrading the resource base. (Assessing local environmental sustainability is an integral part of identifying and planning potential enterprises)
5) Consultation with villages' representatives to plan the future activities of the project and development agendas
6) Review of how deeply existing technologies could be used in the villages
7) Creating links to the existing ICT4D network established in the Edulink -project. Throughout the project, the actions of the two projects are interlinked and collaboration is build between the projects

October 2009 - January 2010: Design of ICT4RD prototypes and development of participatory strength-based design approaches:

1) Creation of the ICT4RD platform to support the ICT4RD village network
2) Idea generation and brainstorming for the first ICT4RD designs; evaluation and refninig of the ideas together with experts and village representatives
3) Selection of viable ideas to be implemented within the project. Example of such activities is a development of a community learning tool for learning different languages.
4) Creation of focus groups (kids and senior groups, ad hoc groups, etc...) and training of local villagers in ICT via the local HEI base for computer science studies
5) Establishing a constant feedback loop from villages via the ICT4RD platform

What still needs to be achieved

1) Design and implementation of ICT4RD applications based on the findings from the design of prototypes in close collaboration with village representatives (e.g. meaning that the project workers will spent considerably amount of time living in the village)
2) Formative evaluation of ICT4RD applications (they must be easy and secure to use, time-sparing, effective and efficient). The formative evaluation of the ICT4RD prototype applications constantly feeds into to the development of the applications.
3) Dissemination of primary project results inside and the outside the network.

Expected evaluation of the project results

"Monitoring and evaluation (M&E) of development activities provides development managers, and civil society with better means for learning from past experience, improving service delivery, planning and allocating resources, and demonstrating results as part of accountability to key stakeholders" (World Bank, 2004). Highly believing in the importance of monitoring and evaluation, we are constantly monitoring activities and outcomes during the whole project's duration. Qualitative means are used to measure the impact and identify unexpected opportunities of the project on the everyday practices of village communities. The main aims of the evaluation are to monitor the achievement of development objectives through collection of empirical data formative evaluation: to support development of ICT4RD through evaluation of mock-ups and prototypes summative evaluation: evaluation of acceptance and impact of ICT4RD applications

Five types of evaluation will be carried out according to the following criteria:

1) Evaluation on rural livelihoods:
    - Livelihood evaluation will focus more on process and longer-term outcomes than immediate project outputs. This necessitates a change in focus from the one-time evaluation of project outputs (management or project level evaluation) to livelihood impact evaluation (stakeholder or community level evaluation). The adaptation of monitoring and evaluation (M&E) methods to the livelihoods approach requires an understanding of participatory methods and of the role of evaluation as an iterative, community-owned tool (Pasteur 2001).
    - Indicators for livelihood outcomes are inherently flexible. Livelihood outcomes for a particular community are negotiated as part of any intervention process. To this extent they will be somewhat unique to a locality or situation (Carney 1998).
    - Possible approaches to assess the changes in communities:
        - o self-efficacy; people's judgment of their capabilities to execute courses of actions required to reach objectives; judgment of one's capabilities to bring about desired outcomes within the community (Bandura, 1995)
        - o locus of control; one's belief in his or her abilities to control life events; how reinforcements can impact human behavior (Rotter, 1954).
2) Evaluation on ICT:
    - software analyses including, for example, the type of ICT equipment and/or software and/or organizational design features deployed in a specific setting
    - usability testing with the developed ICT4RD prototypes and applications
    - the metrics for testing technologies developed during the project include connectivity, access, relevancy, sustainability, compatibility, complexity, reliability, familiarity, possible integration with other technologies (Rogers, 1995)
    - socio-technical methodologies relevant to ICT for livelihoods. While much of pure ICT

evaluation is concerned with the functions and reliability of technology on its own, there must be an evaluation that considers the whole system and the relationship between people and technology (Soft Systems methodology, Multiview, and more recently Community Informatics are examples of these)

3) Evaluation on "ICT for rural livelihoods":

   With a few notable exceptions, there is a lack of systematic evaluation data on ICT's contribution to rural development at project and programme level. Our project will provide rigorous evidence of the impact of ICTs on livelihoods, to be used for evaluating other projects as well.

4) Evaluation on Cost indicators – including, for example, fixed, variable and recurrent costs.

   Accomplishments will be compared with general goals and expenses will be compared with budget. Data will be collected throughout the program's implementation.

5) Evaluation of a strength-based design approaches

   - analysis of strength-based design as a foundation for agile ICT4RD development methods
   - pros and cons of the strength-based design
   - applicability of the design approach to other settings, especially globally; scalability and generalization of the method

During the project, the following self-evaluation measured are used in order to monitor the quality of work within the project both during the execution and after the delivery of any result. A set of specific self-assessment metrics will be defined to set the standards for all work carried out within the project. A steering board will be nominated to monitor the progress of the project.

The total cost of the project is 385.000 euro. As mentioned before, the whole project is a constant work in progress, made possible thanks to the strict and effective collaboration between rural villagers and the project's staff. The future activities and outcomes will be crucial for its implementation and the creation of an ICT4RD Network on a global scale.

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